Serial No. 09/616,020
Art Unit No. 2817

LISTING OF CLAIMS

1. (currently amended) A signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate N individual output signals; and

a reconstructor

for weighting each of the N individual output signals using a corresponding weight to generate N individual weighted signals; and

for superposing the N individual weighted signals to obtain M output signals;

whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent,

wherein one of the N resonators is a Lorentzian resonator.

2. (canceled)

3. (original) The signal processing system of claim 1, wherein one or more of the plurality of resonators are Lorentzian resonators, and wherein the *N* individual output signals are fed to a mixing matrix for coupling of these *N* individual output signals.

4. (original) The signal processing system of claim 1, wherein the plurality of resonators form a dynamic filter array.

5. (currently amended) ~~The~~ A signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate *N* individual output signals; and

a reconstructor

for weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

for superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and

whereby one of the parameters or the weight is time dependent ~~of claim 1~~, wherein the weight is time dependent and frequency dependent.

6. (original) The signal processing system of claim 1, wherein the reconstructor comprises circuitry for dynamically calculating the corresponding weights used for weighting each of the *N* individual output signals.

7. (currently amended) The signal processing system of claim 1, wherein the reconstructor superposes the *N* individual weighted signals by a mathematical operation selected from a set of operations consisting of addition, subtraction, multiplication, and division.

8. (currently amended) The signal processing system of claim 5 superposes the *N* individual weighted signals by a mathematical operation selected from a set of operations consisting of addition, subtraction, multiplication, and division ~~1, wherein the reconstructor comprises an adder for superposing the *N* individual weighted signals~~.

9. (canceled)

10. (currently amended) The signal processing system of claim 11 ~~claim 1~~, wherein the back end system is a hearing aid, or a speech recognition system, or a speaker recognition system, or a pervasive computing device, or a computer system.

11. (currently amended) ~~The~~ A signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate *N* individual output signals; and

a reconstructor

for weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

for superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent ~~of claim 9~~ and;

an interface circuitry serving as interface to a back end system, wherein the interface circuitry comprises an amplifier and loudspeaker.

12. (currently amended) ~~The~~ A signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate *N* individual output signals; and

a reconstructor

for weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

for superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent ~~of claim 1~~,

wherein one of the plurality of resonators comprises a coil, a resistor, and a capacitor.

13. (currently amended) A ~~The~~ signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate *N* individual output signals; and

a reconstructor

for weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

for superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent ~~of claim 1~~,

wherein one of the plurality of resonators comprises a micromechanical element, preferably a cantilever.

14. (original) The signal processing system of claim 1, wherein one of the plurality of resonators is realized by a combination of a processor and a code that embodies an algorithm for execution by the processor.

15. (original) The signal processing system of claim 1, wherein the plurality of resonators and the reconstructor are realized in a computer system comprising a processor and a code that when executed by the processor generates the *M* output signals.

16. (currently amended) The signal processing system of claim 1 ~~, 9, 10, or 15~~, wherein the input signal is a voice signal.

17. (currently amended) The signal processing system of claim 1 ~~or 15~~, wherein the *M* output signals represent a set of descriptors which describe properties of the input signal.

18. (original) The signal processing system of claim 17, wherein the set of descriptors is usable by a speech recognition system or speaker recognition system.

19. (currently amended) ~~The~~ A signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate *N* individual output signals; and

a reconstructor

for weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

for superposing the *N* individual weighted signals to obtain *M* output signals; whereby $M \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent ~~of claim 1 or 15~~, wherein the *N* individual weighted signals identify different vowels and/or classes of consonants.

20. (currently amended) The signal processing system of claim 15, wherein the code embodies an ~~algorithms~~ algorithm for generating a descriptor ~~sets~~ set for use in a speech recognition system or speaker recognition system.

21. (currently amended) ~~The~~ A signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate *N* individual output signals; and

a reconstructor

for weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

for superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$ where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent ~~of claim 14 or 20~~,

wherein one of the plurality of resonators is realized by a combination of a processor and a code that embodies an algorithm for execution by the processor and wherein the algorithm represents a differential equation, preferably a second order equation.

22. (original) ~~The~~ A signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate *N* individual output signals; and

a reconstructor

for weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

for superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent ~~of claim 1~~,

and, wherein there is more than one input signal.

23. (currently amended) ~~The~~ A signal processing system for processing an input signal, comprising:

a plurality of resonators, each resonator having parameters characterizing it, for processing the input signal to generate *N* individual output signals; and

a reconstructor

for weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

for superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent, ~~of claim 1~~

further comprising means for receiving *L* time signals which either make the parameters or the weights time dependent and wherein $L \in \mathbb{N}$.

24. (original) The signal processing system of claim 23, wherein the L time signals are provided by a resonator, a reconstructor, or a computer.

25. (currently amended) Method for processing an input signal, comprising the steps:

processing the input signal by means of a plurality of resonators, each resonator having parameters characterizing it, to generate N individual output signals;

weighting each of the N individual output signals using a corresponding weight to generate N individual weighted signals;

superposing the N individual weighted signals to obtain M output signals;

whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and

receiving L time signals which either make the parameters or the weights time dependent and wherein $L \in \mathbb{N}$ whereby one of the parameters or the corresponding weight is time dependent.

26. (currently amended) A computer program element comprising:

computer program code means to make a computer system execute procedure for the processing of an input signal by:

processing the input signal to generate *N* individual output signals;

weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

superposing the *N* individual weighted signals to obtain *M* output signals;

whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and

receiving *L* time signals which either make the parameters or the weights time dependent and wherein $L \in \mathbb{N}$ ~~whereby either for the processing of the input signal or the weighting of each of the N individual output signals the representation or equivalent of a time signal is used~~.

27. (currently amended) A computer program product for the processing of an input signal, said computer program product comprising a computer readable medium, having thereon:

computer program code means, when said program is loaded, to make a computer system, execute procedure to:

process the input signal to generate *N* individual output signals;

weigh each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals; and

superpose the *N* individual weighted signals to obtain *M* output signals;

whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and

receiving *L* time signals which either make the parameters or the weights time dependent and wherein $L \in \mathbb{N}$ ~~whereby either for the processing of the input signal or the weighting of each of the *N* individual output signals the representation or equivalent of a time signal is used~~.

28. (new) A method for a signal processing system to process at least one input signal, comprising the steps of:

processing the input signal using a plurality of resonators to generate *N* individual output signals;

weighting each of the N individual output signals using a corresponding weight to generate N individual weighted signals; and

superposing the N individual weighted signals to obtain M output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent

wherein one of the plurality of resonators is realized by a combination of a processor and a code that embodies an algorithm for execution by the processor and wherein the algorithm represents a differential equation, preferably a second order equation.

29. (new) A method for a signal processing system to process at least one input signal, comprising the steps of:

processing the input signal to generate N individual output signals; and

weighting each of the N individual output signals using a corresponding weight to generate N individual weighted signals; and

superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent and, wherein there is more than one input signal.

30. (new) A method for a signal processing system to process at least one input signal, comprising the steps of:

processing the input signal to generate *N* individual output signals;

weighting each of the *N* individual output signals using a corresponding weight to generate *N* individual weighted signals;

superposing the *N* individual weighted signals to obtain *M* output signals; whereby $N \in \mathbb{N}$ and $M \in \mathbb{N}$, where $\mathbb{N}$ is the set of positive integers, and whereby one of the parameters or the weight is time dependent and the weight is time dependent and frequency dependent.